

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2320
Gaithersburg, Maryland 20899-2320

SRM Number: 2037
MSDS Number: 2037
SRM Name: Solvent Red 24 Diesel
Fuel Dye

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Description: This Standard Reference Material (SRM) is intended for the verification and calibration of spectrophotometers used to measure the concentration of Solvent Red dyes employed as colorants to mark "off-road" diesel fuel. SRM 2037 is certified for the purity of the Solvent Red 24 Dye ($C_{24}H_{20}N_4O$, molecular mass 380.45) and for the second derivative molecular absorption coefficients (extinction coefficients) of solutions of Solvent Red 24 Dye in *p*-xylene and in 97:3 (v:v) kerosene:*p*-xylene. Each unit of SRM 2037 consists of an amber 30 mL (1 oz), screw-capped bottle containing approximately 100 mg of solid Solvent Red 24 Dye.

Substance: Solvent Red 24 Diesel Fuel Dye

Other Designations: Solvent Red 24 Diesel Fuel Dye (C.I. solvent red 24; sudan red IV; 2-naphthalenol; scarlet red; oil red; tricosol red 24p; solvent red 24; 2-naphthol)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Number	EC Number (EINECS)	Nominal Mass Fraction (%)
Solvent Red 24	85-83-6	201-635-8	98

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 1 Reactivity = 0

Major Health Hazards: Skin irritation, cancer hazard in humans.

Physical Hazards: Dust/air mixtures may ignite or explode.

Potential Health Effects (short term exposure)

Inhalation: May cause irritation of the respiratory tract.

Skin Contact: May cause irritation, vomiting, diarrhea, stomach pain.

Eye Contact: No information on significant adverse effects.

Ingestion: May cause vomiting, diarrhea, stomach pain.

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	<input type="checkbox"/>	<input checked="" type="checkbox"/>
In the International Agency for Research on Cancer (IARC) Monographs	<input type="checkbox"/>	<input checked="" type="checkbox"/>
By the Occupational Safety and Health Administration (OSHA)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration, if not breathing, by qualified personnel. Get immediate medical attention.

Skin Contact: Rinse affected area with copious amounts of water for at least 15 minutes while removing contaminated clothing. Get medical attention, if needed.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Get immediate medical attention.

Ingestion: If a large amount is swallowed, get immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Slight fire hazard. Dust/air mixtures may ignite or explode.

Extinguishing Media: Regular dry chemical, carbon dioxide, water, and regular foam.

Fire Fighting: Move container from fire area if it can be done without risk. **DO NOT** scatter spilled material with high-pressure water streams. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): Not applicable **Autoignition (°C):** Not applicable **Method:** Not applicable

Flammability Limits in Air (Volume %) – Upper: Not applicable **Lower:** Not applicable

Flammability Class (OSHA): Not applicable

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Collect spilled material in appropriate container for proper disposal. Keep unnecessary people away, isolate hazard area and deny entry. Refer to Section 13, “Disposal Considerations”.

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances. Wear splash resistant safety goggles. Wear chemical resistant clothing and gloves. An eye wash station and washing facilities should be readily available near handling and use areas.

Safe Handling Precautions: See Section 8, “Exposure Controls and Personal Protection”.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits: Solvent Red 24 Diesel Fuel Dye (Sudan IV)

No occupational exposure limits established.

Ventilation: Use local exhaust ventilation system. Ensure compliance with applicable exposure limits.

Respirator: If necessary, refer to the “NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84” for selection and use of respirators with organic vapor cartridges certified by NIOSH.

Eye Protection: Wear safety goggles. **DO NOT** wear contact lenses in the laboratory. An eye wash station should be readily available near of handling and use areas.

Personal Protection: Wear protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Solvent Red 24 Diesel Fuel Dye (Sudan IV)
Appearance and Odor: deep red; odorless
Molecular Formula: C ₂₄ H ₂₀ N ₄ O
Relative Molecular Mass: 380.4
Decomposition Point (°C): 260
Melting Point (°C): 199
Specific Gravity (water=1): not available
Water Solubility: insoluble
Solvent Solubility: Soluble in chloroform, oils, fats, paraffins, phenol, petroleum ether, hot petrolatum. Slightly soluble in acetone, ethanol, benzene

10. STABILITY AND REACTIVITY

Stability: ☒ Stable ☐ Unstable

Stable at normal temperatures and pressure.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Avoid contact with incompatible materials.

Incompatible Materials: Oxidizing materials. In contact with strong oxidizers, Solvent Red 24 is a fire and explosion hazard.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition or combustion produces oxides of carbon and nitrogen.

Hazardous Polymerization: ☐ Will Occur ☒ Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: ☒ Inhalation ☒ Skin ☒ Ingestion

Toxicity Data: Rat, Subcutaneous (LD₅₀/58 weeks continuous): 512 mg/kg (Tumorigenic)
Hamster Embryo: 100 mg/L (Mutagenic)

Target Organ(s): Liver.

Health Effects (Acute and Chronic): Solvent Red 24, may be absorbed through damaged skin and cause nausea, vomiting, abdominal pain, diarrhea, fever, general malaise, and hypotension. Ingestion may cause similar effects. May cause nausea, vomiting, abdominal pain, diarrhea, fever, general malaise, and hypotension. See Section 3: "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Environmental Summary: Environmental impact and effects not established.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations. Keep out of sewers and water supplies.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: N/A; Hazard Class: N/A; Packing Group N/A.

Canadian Transportation: Not classified.

15. REGULATORY INFORMATION

U.S. REGULATIONS

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not Regulated.

OSHA Process Safety (29 CFR 1910.119): Not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE: No

CHRONIC: No

FIRE: No

REACTIVE: No

SUDDEN RELEASE: No

STATE REGULATIONS

California Proposition 65: Not regulated.

CANADIAN REGULATIONS

WHMIS Classification: Not determined.

EU CLASSIFICATION

Xi Irritant.

EU RISK AND SAFETY PHRASES

R36/38 Irritating to eyes and skin.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Listed on inventory.

TSCA 12(b), Export Notification: Not listed.

16. OTHER INFORMATION

Sources: MDL Information Systems, Inc., MSDS *Sudan IV*, 19 March 2003.
Sigma-Aldrich, Inc., MSDS *Sudan IV*, 07 July 2004.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use as a guide in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.